WHAT IS CLAIMED IS:

1. A method of using an interferometric confocal microscope to measure features of a trench or via in a substrate, wherein the interferometric confocal microscope produces a measurement beam, the method comprising:

focusing the measurement beam at a selected location at or near the bottom of the trench or via to excite one or more guided-wave modes within the trench or via;

measuring properties of a return measurement beam that is produced when the measurement beam is focused at the selected location, said return measurement beam including a component corresponding to a radiated field from the one or more guided-wave modes that are excited within the trench; and

determining the features of the trench or via from the measured properties of the return measurement beam.

2. The method of claim 1, further comprising scanning the measurement beam in a direction that is substantially normal to the substrate to locate the bottom of the trench or via.

3. The method of claim 1, wherein determining features involves determining a depth of the trench or via.

4. The method of claim 1, further comprising:

focusing the measurement beam at a selected distance above the surface of the substrate and over the trench or via; and

measuring properties of a return measurement beam that is produced when the measurement beam is focused at the selected distance above the surface of the substrate and over the trench or via,

wherein determining the features of the trench or via involves combining measurements of properties of the first-mentioned return measurement beam and measurements of properties of the second-mentioned return measurement beam.

5. The method of claim 4, wherein the selected location is a distance Z1 below the top surface of the substrate, where the selected distance is a distance Z2 above the surface of the substrate, and wherein Z1 equals Z2.

6. The method of claim 1, wherein the one or more guided-wave modes that are excited are leaky guided-wave modes.

7. The method of claim 1, further comprising generating a measurement beam that is asymmetric.

8. The method of claim 1, further comprising generating a measurement beam that is asymmetric.

9. The method of claim 1, wherein measuring the properties of the return measurement beam comprises measuring conjugated quadratures of fields of the return measurement beam.

10. The method of claim 4, wherein measuring properties of the field of a return measurement beam that is produced when the measurement beam is focused at the selected distance above the surface of the substrate and over the trench or via comprises measuring conjugated quadratures of fields of that return measurement beam.

11. The method of claim 10, wherein determining the features of the trench or via involves combining the measurements of conjugated quadratures of fields of the return measurement beam that is produced when the measurement beam is focused at the selected location and measurements of conjugated quadratures of fields of the return measurement beam that is produced when the measurement beam is focused at the selected distance above the surface of the substrate and over the trench or via.

12. The method of claim 1, wherein measuring the properties of the return measurement beam involves using a bi-homodyne detection technique.

13. The method of claim 1, wherein measuring the properties of the return measurement beam involves using a quad-homodyne detection technique.

14. The method of claim 1, wherein the interferometric confocal microscope is a far-field interferometric confocal microscope and the measurement beam is a far-field measurement beam.

15. The method of claim 1, wherein the interferometric confocal microscope is a near-field interferometric confocal microscope and the measurement beam is a near-field measurement beam.

16. The method of claim 1, further comprising performing the steps of focusing and measuring at a plurality of locations along the bottom of the trench to detect a defect within the trench, wherein said selected location is one of said plurality of locations.